THE INTERIM REPORT OF THE SELECT COMMITTEE ON FORESTRY

WOODCHIPS AND BIOMASS

HOUSE OF ASSEMBLY

Select Committee
on Forestry

PO Box 698
Halifax, Nova Scotia
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Hon. Arthur R. Donahoe, Q.C.
Speaker of the House of Assembly
12th Floor, Toronto Dominion
Bank Building
1791 Barrington Street
Halifax, Nova Scotia
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Dear Mr. Speaker:

I am writing in my capacity as Chairman of the Select Committee on Forestry to inform you that the Committee has completed the first phase of its inquiry in Wood Waste, Wood Residue and Biomass as it relates to a source of energy in Nova Scotia.

In accordance with Resolution No. 465 passed by the House of Assembly on May 2, 1985, I am pleased to submit to you the interim Report of the Select Committee on Forestry.

Yours truly,

Jack Coupar, M.L.A.
Chairman

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Enc.

INTERIM REPORT

The Committee was established through legislative approval of a resolution presented by the Minister of Lands and Forests, the Honourable Ken Streatch in May of 1985.

The resolution noted the very significant industrial harvest from Nova Scotia forests in lumber, pulp, paper, hardboard, Christmas trees, and other wood products. It also stated that consistent with the provincial government's forest management policies and efforts, opportunities exist by which forest residue and wood waste could be further utilized for energy purposes.

The Committee was empowered to inquire into the use of wood chips, wood residues, and other forest biomass as an energy source for domestic, institutional, commercial, agricultural, and industrial energy needs in Nova Scotia including, without restricting the generality of the foregoing, inquiries into all appropriate aspects of such usage.

The areas of inquiry are outlined on the following page:

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(1) Availability of wood chips, residue and other forest biomass.

(2) The availability and development of markets for wood chip products.

(3) The relative advantage of greater use of the various materials included in the term forest-biomass.

(4) The enhancement of silviculture efforts and progress toward the New Forest concept through woodland improvements by biomass harvesting and advanced management practices.

(5) Methods, efficiency, and costs of harvesting and producing wood chips, wood residue, and other forest biomass.

(6) The environmental consequences of harvesting and preparation of biomass products for market.

(7) The economics of biomass use as an energy source.

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Membership of the Select Committee on Forestry.

(Wood Chips)

Chairman, Jack Coupar, M.L.A., Colchester North.

The Hon. Ken Streatch, Minister of Lands and Forests.

The Hon. Joel Matheson, Minister of Mines and Energy.

Cora Etter, M.L.A., Hants East.

Dr. Jim MacLean, M.L.A., Inverness North.

Donald MacLeod, M.L.A., Cape Breton West.

Harold Huskilson, M.L.A., Shelburne.

Guy Brown, M.L.A., Cumberland Center.

Bob Levy, M.L.A., Kings South.

Staff:

Douglas MacLeod

(Principal Assistant to the Minister of Lands and Forests.)

W. D. Fraser, Secretary.

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Forestry is the largest natural resource-based sector of the Nova Scotia economy and its annual output is greater than five hundred million dollars.

It is highly labour-intensive even with the mechanization required to compete in current markets. Direct employment is estimated at more than 12,000 jobs with indirect employment estimated at over 16,000 jobs.

Forestry statistics reveal that our wocdlands are currently only twenty-five percent productive; output could be doubled at least in the decades ahead. The potential for improved productivity and job creation is substantial and these estimates include only a minimal amount of biomass production. If woodchip output and marketing can achieve even a fraction of the indicated potential then our forest lands hold firm promise of substantial economic improvement throughout the province.

Privately-owned lands account for about three-quarters of provincial woodland resources, the principal source of supply for our forest industries. The Private Lands Directorate now being established by the Department of Lands and Forests will provide technical and professional advice as well as financial incentives to assist landowners in managing their acreage more effectively and increase the quantity and quality of product.

After appropriate advertisement, your Committee held public hearings at Port Hawkesbury, Truro, and in Halifax, and more than forty submissions

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were received. Their contents, and the transcripts of oral presentations have been examined and suggestions are being given careful consideration.

The Committee is very much impressed with the interest in biomass usage in Nova Scotia and in the thoughtful and constructive ideas presented for our consideration.

There appears to be broad recognition among Nova Scotians of the importance of Forestry as a resource industry and of the demonstrated need for greater woodfibre usage as well as the improved conservation and silviculture practices that would be complementary to expanded biomass harvesting.

Statistics quoted on the following page confirm Forestry's place is one of our most important economic sectors.

The Committee met to discuss procedures and agreed to ask for written submissions from all interested in biomass production or usage in Nova Scotia, and also agreed to advertise and hold public hearings at which both oral and written submissions would be received. The Committee also declared itself open to submissions from any source and in any appropriate form to assist in its fact-finding on the various aspects of wood chip harvesting and marketing.

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The Committee visited several operations of various types in Nova Scotia, Prince Edward Island, and Maine for first-hand observation and practical assessment of systems of harvesting, processing, delivery, and usage of biomass products.

Nova Scotia Locations:

Scott Paper

Williams Lumber Mill

Stora Limited

Britex Limited

Avon Valley Greenhouses

P.E.I. Locations:

Montague Hospital chip-heating operation.

Senior Citizens facility under construction (wood chip heating).

Downtown Central Heating Systems being developed to use wood-chip heating.

Maine Locations:

S. D. Warren, pulp & paper mill (2,000) plant staff and part of their woods operation including chipping, forestry management etc.

A smaller mill with sawing operations, residue usage in heat production etc. with co-generation facility for infeed to power grid off-peak electricity.

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A textile plant under modification for wood-chip burning and co-generation of electricity to the Central Maine power grid.

This page and the five following pages will provide some information and definitions relating to biomass which is by general definition all material of plant and animal origin, excluding fossil fuels (i.e. coal, oil, gas, etc).

Its sources are:

Wood and some related plant growths,

Garbage and waste,

Sewage and manure,

Agricultural plants,

Seaweed,

Peat.

FOREST SOURCES:

Tree stems and branching, including harvesting residue.

Mill residue (bark, sawdust, etc.)

Forest thinning and undergrowth removal

Coppice Wood.

Output is in the form of sawlogs, pulpwood, poles, pilings, slab chips, sawdust, as well as bark and logging slash.

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Harvesting methods include clearcutting, selective strip cutting, strip cutting, stand thinning, and land clearing.

LOGGING METHODS:

Conventional - short wood
tree length
Slab Collecting.
Full Tree - process at landing.
Whole Tree Chipping.
Coppice Harvesting.

HARVESTING EQUIPMENT:

Chainsaws
Transporters
Harvesters
Feller/Bunchers
Thinners
Skidders
Processors
Chippers
Trucks
Chip Vans.

SYSTEMS: Handling of Wood Fuel

Harvest
Transport
Store
Size Reduction
Drying
Dewatering
Pelletizing
In Feed
Ash Removal

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SYSTEMS: Conversion Technologies

1. Direct combustion.
2. Gasification (air blown)
3. Pyrolysis (oxygen blown)
4. Distillation.
5. Hydrolysis and fermentation.
6. Anerobic digestion.
7. Bacterial digestion.

Energy output is in the form of direct heat, steam, fuel gas, synthetic gas, charcoal, methanol, ethanol, and methane. Combustion methods are the conventional fire box, the so-called Dutch Oven firebox, suspension burning, fluidized bed, gasifier, and some hybrid systems.

FOREST YIELDS IN NOVA SCOTIA

Current growth in Nova Scotia is estimated at six tonnes per hectare per year and the current harvest rate is less than half that amount.

The potential growth rate is 12 tonnes per hectare per year and the energy plantation growth is estimated at greater than twenty tons per hectare annually.

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CURRENT HARVEST AND AVAILABLE BIOMASS

Current estimates indicate that two and a half million cords would be available for biomass usage, in addition to pulp and sawlog production.

The production potential would be equivalent in energy content to approximately six and three-quarter million barrels of oil.

At current oil prices ($10 - 12 U.S. / $14 - 17 Can.) the equivalent cash value would be in the vicinity of one hundred million dollars in import substitution for Nova Scotia. This would provide upwards of sixty-five hundred jobs in direct and spin-off employment.

NOTE: Curent harvest and value estimates are based on current assessments and are subject to variation caused by world market prices for oil. The Committee's final report will include more precise projections based on the latest available statistics and illustrate the range of any discrepancies between available professional estimates.

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Extended benefits are indicated from the usage of wood fibre in energy production. It is a renewable resource with proper management and harvesting, pollution is low, and it offers the potential of lower energy costs which are substantially insulated from inflationary pressures because of depreciation allowances and stable capital costs resulting from predictable equipment life.

There is the further opportunity for indirect benefits for manufacturing and supplying the logging, transportation, and burning equipment required. The technology required can readily be provided by Nova Scotia industry.

CURRENT FOREST FUELED APPLICATIONS

Residential - heating
fireplace

Residual Fuel - woodworking shops
cardboard/paper

IN THE RESIDUAL CATEGORY:

Greenhouses, poultry barns, hospitals, schools, generation of energy from mill waste for their own operation, and in cooperation with pulpmills, offpeak electricity from their own operation. Depending on local legislation and price structure, offpeak power could be fed to appropriate grids.

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POTENTIAL USERS OF WOOD FIBRE FUEL

Potential users include institutions, processing industries, greenhouses etc. Until now, the increase in wood fibre consumption has been slow because of several factors:

(a) High capital cost: the need to convince financial agencies that fibre fuel production and usage are no longer marginal operations.

(b) Wood fibre systems require greater management input.

(c) Uncertainty of economic factors in changing over from oil to wood fibres. These concerns include equipment cost and financing by producer and consumer, security of supply, seasonal operations, and a possible lack of information on the general benefit to the Province of import substitution.

ADDITIONAL DOMESTIC BENEFITS OF FUEL WOOD

Wood fuel systems hold the opportunity of much greater return for landowners and substantial woodland improvements in cooperative activities with owners, forestry firms, and federal and provincial governments.

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Aggressive silviculture and forest management may be applied to provincial agencies on public lands. Private owners, regardless of size, could adopt such practices through various forms of assistance and incentives.

Such activities hold out real promise of enhanced forest productivity, as well as the assurance of ongoing and increasing production for the foreseeable future. These concepts form an important part of provincial forestry policies as outlined in recommendations of the Royal Commission on Forestry in its report presented in late 1984, and confirmed in the Policy Statement issued by the Minister of Lands and Forests on February 3, 1986.

BASIC CONCERNS TO BE RESOLVED

(1) The concern of woodlot owners that the costs of fuel production would be high in relation to return, without some form of incentives.

(2) The need for a commitment to a long-range undertaking by producers and customers.

(3) Complex jurisdictions: i.e., Three levels of Government affecting operational approval, environment questions, etc.

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TO BE DETERMINED:

(1) The availability of a continuing supply of wood chips, and seasonal market factors including appropriate costs.

(2) Transportation systems for the product.

(3) Moisture content in relation to combustion efficiency in various mixes. (wood/oil, chips/sawdust, etc.)

(4) Potential customers an estimates of market demnad.

(5) Marketing groups, individual contracts, supply contractors, etc.

(6) Free-market resolution of supply, marketing, delivery, and price

(7) Implication of wide spread use of forest biomass and waste on forest soil nutrients.

GENERAL OBSERVATIONS

The Committee urges Government and the private sector to proceed with research projects and not be influenced by a false sense of security because of abrupt changes in foreign oil prices. The logical response would be to accept the long-term view that oil is a non-renewable resource and 70 percent of the source is in the Middle East and vulnerable to unstable conditions.

Energy Conservation and import substitution must be a continuing policy; each dollar saved through more efficient practices, and each dollar retained at home instead of spent for foreign oil, add to our domestic economy and the cash flow that creates new employment.

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We welcome the Government's decision to fund a study on the viability of wood chip fuel in a district heating system to supply six buildings in Tatamagouche. The study is to be funded jointly by the Departments of Lands and Forests and Social Services and we would welcome further investigations of the various aspects of using forest fibre materials in the generation of steam and electricity.

We are confident the Government will also consider funding a study of co-generation which is the burning of wood chips for steam heating and the application of excess capacity to electric generation either for on-site use or delivery to the provincial power grid.

The Committee sees wood chip usage in Nova Scotia as having great potential, not only for cost-saving and import substitution but as a means of new and substantial investment in our forest lands and the source of substantial employment.

The Committee welcomes the initiative of the provincial government in the projected chip-fired heating systems for the Nautical Institute and the Bridgewater School Complex. These projects will provide valuable on-site experience and confirmation of operational efficiency.

The Committee also welcomes the recent signing of the Canada/Nova Scotia Memorandum of Understanding on Conservation and Alternative Energy which puts a high priority on wood chip fuel. This new Agreement will provide funds for studies, demonstration projects and information transfer activities to further assist in the development of markets for wood chip fuel.

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CONCLUSION:

There is urgent need for further study and investigation and with emphasis on how the forest industry can play an appropriate role in exploiting what appears to be a new and major source of renewable energy. Appropriate departments of government will have made a substantial start on compiling necessary information and assessing the technical, economic and social aspects of these ideas and such information will be invaluable to the Committee as we proceed with our final report and recommendations.

During the following eight to ten months, this Committee will continue its investigation in consultation with the private sector and appropriate agencies of Government. Our aim is to acquire a detailed picture of wood fibre potential in Nova Scotia and as an export commodity.

We expect to provide constructive recommendations on how the private sector and Government may stimulate development of substantial wood-fibre operations in Nova Scotia.

The members of this Committee are confident that both public and private sectors will respond to the challenge of creating new economic growth in our most important resource industry and expanding business and employment opportunity throughout Nova Scotia.

Respectfully submitted,

Chairman:

Members:

MOTION TO BE MADE UNDER THE HEADING
GOVERNMENT NOTICES OF MOTION

I hereby give notice that on a future day I shall move a Resolution in the form of that attached hereto.

RESOLUTION

Resolution No.:

Moved by: **The Honourable the Minister of Lands and Forests**

WHEREAS the forests of Nova Scotia yield a very significant industrial harvest used in the production of lumber, pulp, paper, hardboard, Christmas trees and other wood products;

AND WHEREAS the benefits from the forests of Nova Scotia in terms of jobs and incomes for Nova Scotians are substantial;

AND WHEREAS our forest management policies are designed to ensure that these benefits are maintained or increased for future generations;

AND WHEREAS consistent with our forest management efforts, opportunities exist to utilize forest residues and wood waste for energy purposes;

AND WHEREAS utilizing harvesting residues and low quality, low volume stands for energy will enhance our silviculture efforts, facilitate the creation of the New Forest, create jobs and provide a new source of income for woodlot owners,

BE IT RESOLVED THAT

(a) this House declares pursuant to the Rules and Forms of Procedure of the House of Assembly that a Select Committee is established to inquire into the use of wood chips, wood residue and other forest biomass from Nova Scotia forests, as an energy source for domestic, institutional, commercial, agricultural, and industrial energy needs in Nova Scotia including, without restricting the generality of the foregoing, to inquire into

(i) the availability of wood chips, wood residue and other forest biomass in Nova Scotia,

(ii) the availability and development of markets for wood chips, wood residue and other forest biomass,

(iii) the relative advantages of greater use of wood chips, wood residue, and other forest biomass as an energy source in terms of employment, income and energy substitution,

(iv) the methods, efficiency and costs of harvesting and producing wood chips, wood residue and other forest biomass,

(v) the environmental consequences of harvesting and producing wood chips, wood residue and other forest biomass,

(vi) the enhancement of silviculture efforts and the creation of the New Forest that will result from the greater use of wood as an energy source, and

(vii) the efficiency and costs of using wood chips, wood residue and other forest biomass as an energy source,

and report to this House the observations, opinions and recommendations of the members of the Select Committee respecting any matters relating to the use of wood chips, wood residue and other forest biomass as an energy source;

(b) notwithstanding the usual practices of this House, if the House is not sitting when an interim or final report of the Committee is completed that the Committee report its findings by depositing its report with the Clerk of the House and it shall thereupon be deemed to have been laid upon the Table;

(c) this House declares pursuant to the Rules and Forms of Procedure of the House of Assembly that the Select Committee be composed of nine members selected by the Striking Committee, six of whom shall be members of the Government party, two of whom shall be members of the Official Opposition and one of whom shall be a member of any recognized party in the House with the first-named member being the Chairman of the Select Committee;

(d) this House declares pursuant to Section 37A of the House of Assembly Act that the Select Committee not be dissolved by prorogation of the House and that the Select Committee is authorized to continue its inquiry after the House is prorogued;

(e) notwithstanding the said Rules or any rules of the House, the Select Committee of the House is empowered to examine and inquire into all such matters and things as may be referred to the Committee by this House and from time to time report to this House the observations and opinions of the Committee respecting matters and things referred to the Committee and the Committee is further empowered to send for and examine witnesses, papers and records, and to extend to any witness the protection of this House;

(f) the Select Committee is empowered to meet outside of the Province touching on matters pertaining to its study, review and recommendation;

(g) all the powers and privileges under the House of Assembly Act and amendments thereto and the Rules of the House applicable to Standing and Select Committees while the House is in Session shall apply and be of full force and effect during the sittings of the Select Committee;

(h) this House authorizes the Legislature Internal Economy Board on behalf of the Select Committee to employ such members and staff as

may be necessary to enable the Select Committee to carry out its duties; and

(i) this House declares that the Legislature Internal Economy Board is authorized to provide the Select Committee, its members and staff with such facilities and funds as are required to carry out their duties and as are provided for by and pursuant to Section 50 of the Public Service Act.